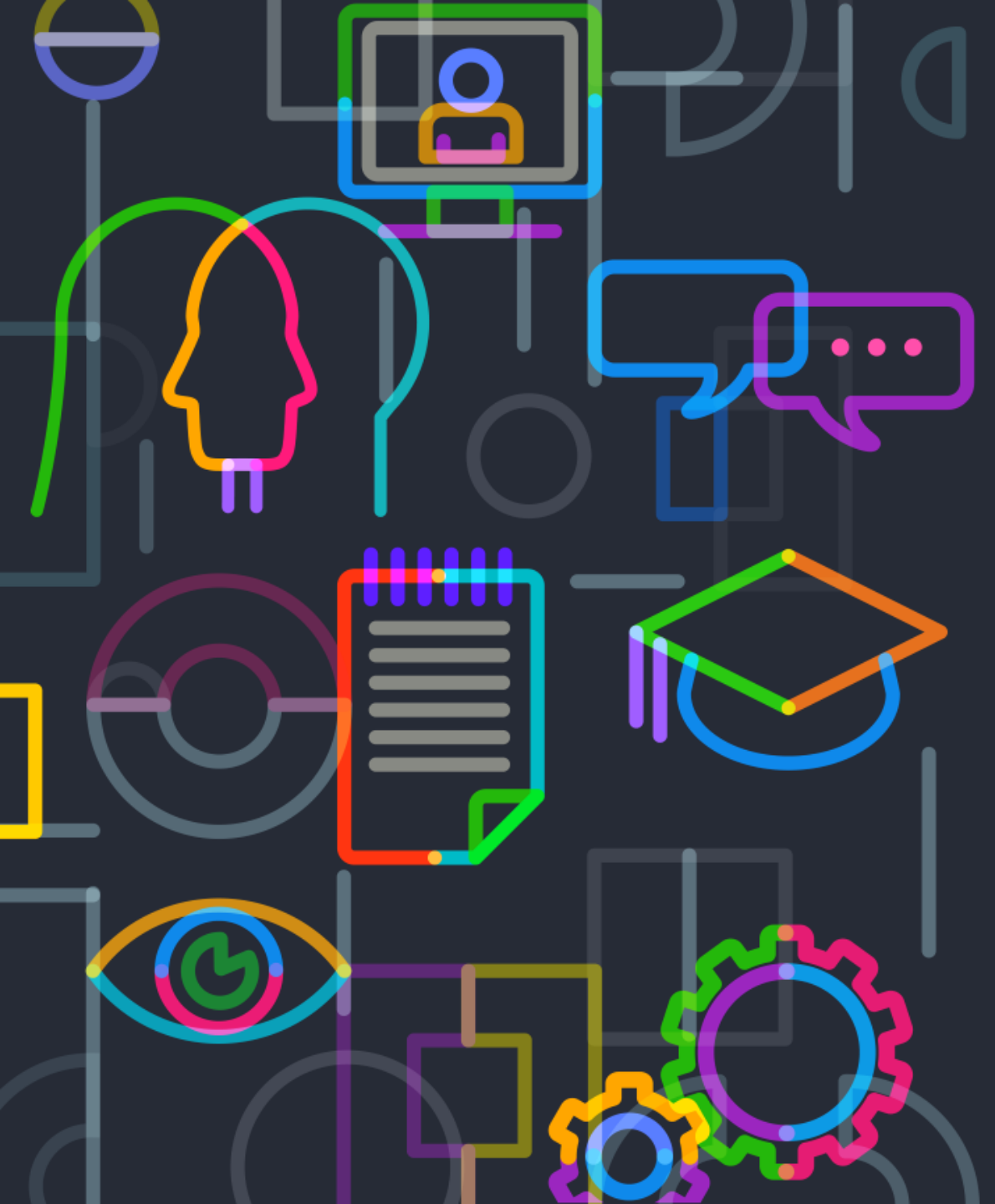




# Building and Maintaining Equitable School Websites



# David Hefley

Web Developer at the  
Nebraska Department of  
Education

Responsible for public facing  
website and front-end  
development

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402-471-4538

# Agenda

- Accessibility Overview
- Laws and Standards
- Primary types of disabilities
- How to make this task easier

# Accessibility

Accessibility focuses on how a disabled person accesses or benefits from a site, system or application. Accessibility is an important part of the designing your site and should be considered throughout the development process.





# Why Accessibility?

- Provide Equitable Access
- Government Mandates
  - ADA
  - Section 504 & 508
- Overall Usability

***The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect.***

Tim Berners-Lee, W3C Director and inventor of the World Wide Web

# Statistics in the United States

Age	Rate
Under 5	>1%
5-17	5.6%
18-64	10.6%
65+	35.2%

- **Overall rate of people with disabilities in 2016 was 12.8%**
  - Includes all types of disabilities (ambulatory, cognitive)
  - Vision - 2.5%
  - Hearing - 3.5%

# Statistics in the United States

Regardless of age, disabled Americans are adopting tech at lower rates

*% of U.S. adults who say they have...*

	Age 65+			Age 18-64		
	Any disability	No disability	Diff	Any disability	No disability	Diff
Desktop/Laptop	50	66	-16	67	84	-17
Smartphone	32	45	-13	70	87	-17
Home broadband	36	57	-21	66	80	-14
Tablet	21	36	-15	44	57	-13



# Accessibility Law



# Sections 504 & 508

Parts of the Workforce Rehabilitation Act of 1973 mandating all electronic and information technology developed, procured, maintained, used by, or funded by, the federal government be accessible to people with disabilities.

Applies to government agencies, federally funded non-profits, public higher education institutes, and public k-12 schools

# ADA

Title III – requires private sector businesses that serve as “places of public accommodation” to remove “access barriers” that inhibit a disabled person’s access to goods and services

Some confusion over whether this applies only to entities with physical locations

Applies to businesses, state and local governments, nonprofit services providers, and schools

An abstract graphic on the left side of the slide features a dark navy blue background. It is populated with various colorful, stylized line-art icons. These include a person at a computer, a profile of a head, two overlapping speech bubbles, a document with horizontal lines, a graduation cap, a stylized eye with a 'G' inside, and two interlocking gears. The icons are rendered in a variety of colors including green, orange, blue, purple, and yellow, creating a vibrant, tech-oriented aesthetic.

# Increasing Lawsuits

2018 saw record number of  
ADA Title III Website lawsuits

Up **177%** from 2017



# Accessibility Standards

W3C's WCAG 2.1

**World Wide Web Consortium's  
Web Content Accessibility Guidelines  
Version 2.1**

# W3C's WCAG 2.1

Set of technical guidelines to make the web conform to a set of standards around accessibility.

Objective and Subjective

3 levels(A, AA, AAA)

WCAG 2.1 compliance includes 2.0

# WCAG 2.1 - Levels

**A** Lowest Level - Must  
Minimal accessibility

**AA** Mid Range - Should  
Targeted level for most purposes

**AAA** Highest - May  
Very difficult/impossible to achieve

# WCAG 2.1 – The Good

A lot of guidance, discussion, and examples

Testable success criteria to meet each of the three levels

Actual techniques on how to accomplish success criteria and examples for when it fails



# WCAG 2.1 – The Bad

**A lot** of guidance, discussion, and examples

Some of the success criteria are hard to automate/need human interaction

AAA is hard to achieve

# OER toolkit – About OER



## About Open Educational Resources

`<img src='https://education.ne.gov/school.jpg' alt='' />`

Do you want to know about Open Educational Resources? This module presents an overview of what they are, why they matter to education and how to get started on your OER journey.

Introduction to OER

What is OER?

The 5Rs of OER

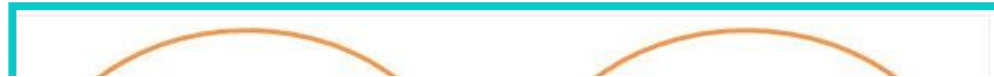
What's Not OER

Why OER?

**Open Educational Resources (OER)** are freely accessible, openly licensed text, media, and other digital assets that are useful for teaching, learning, and assessing as well as for research purposes.

The development and promotion of open educational resources is often motivated by a desire to provide an alternate or enhanced educational paradigm.

Most OER materials are released under an open license or reside in the public domain. The difference between the public domain items and the open license items is shown below.



`<img  
src='https://education.ne.gov/public_vs_open.jpg'  
alt='Public domain license waives all ownership. With  
open licenses, ownership is retained.' />`



Public Domain versus Open License Diagram

# **Web Accessibility Initiative's Accessible Rich Internet Applications specification**

Aka: ARIA

ARIA can modify existing element semantics or add semantics to elements where no native semantics exist. It can also express semantic patterns that don't exist at all in HTML, like a menu or a tab panel. Often, ARIA lets us create widget-type elements that wouldn't be possible with plain HTML.



```
<img src='fb_like.png' />
```

```
<img src='fb_like.png' aria-label='Click to Like' role='button'  
/>
```

No ARIA is better than bad ARIA

# 4 Primary disabilities to consider

- Vision
- Hearing
- Mobility
- Cognitive



# Vision

- **Blindness**

- substantial, uncorrectable loss of vision in both eyes.

- **Color blindness**

- difficulty distinguishing between colors
- inability to perceive any color.

- **Low vision**

- poor acuity / blurriness
- tunnel vision
- central field loss
- Floating spots

# Blindness

- Organization of page is very important – allow screen readers to represent content
- Link text is crucial
- Alternative text to images
- Make sure primary content is identified appropriately
- Use of ARIA (Accessible Rich Internet Applications)



# Vision Impairments

- Low Vision
- Double Vision
- Tunnel Vision
- Blurriness
- Floaters/Dark Patches

# Vision Impairments

- High Contrast
- Organized Content
- Use of screen-reader aiding attributes (ARIA)
- Alternate Text format (esp. for images and videos)
- Use icons and text to provide meaning, not just color

# Color Blindness

- **Color blindness** occurs when you are unable to see **colors** in a normal way. It is also known as **color** deficiency.
- **Color blindness** often happens when someone cannot distinguish between certain **colors**. This usually happens between greens and reds, and occasionally blues.
- Different kinds of color blindness

# NE Materials Matter

### Filter Results


K1212345678910

1112Toggle Selection

SEARCH TITLES

### Amplify ELA (2016)

Amplify | Grades 6-8 | 2016 Edition

**edreports.org**  
Go to [EdReports.org](https://edreports.org) for detailed information about alignment and usability

Sixth Grade

Meets expectations for alignment. [Learn more](#)

REPORT BREAKDOWN

Seventh Grade

Meets expectations for alignment. [Learn more](#)

REPORT BREAKDOWN


Eighth Grade

Meets expectations for alignment. [Learn more](#)

REPORT BREAKDOWN

### Collections (2017)

Houghton Mifflin Harcourt | 2017 Edition

**edreports.org**  
Go to [EdReports.org](https://edreports.org) for detailed information about alignment and usability

Tenth Grade

Does not meet expectations for alignment. [Learn more](#)

REPORT BREAKDOWN

Eleventh Grade

Partially meets expectations for alignment. [Learn more](#)

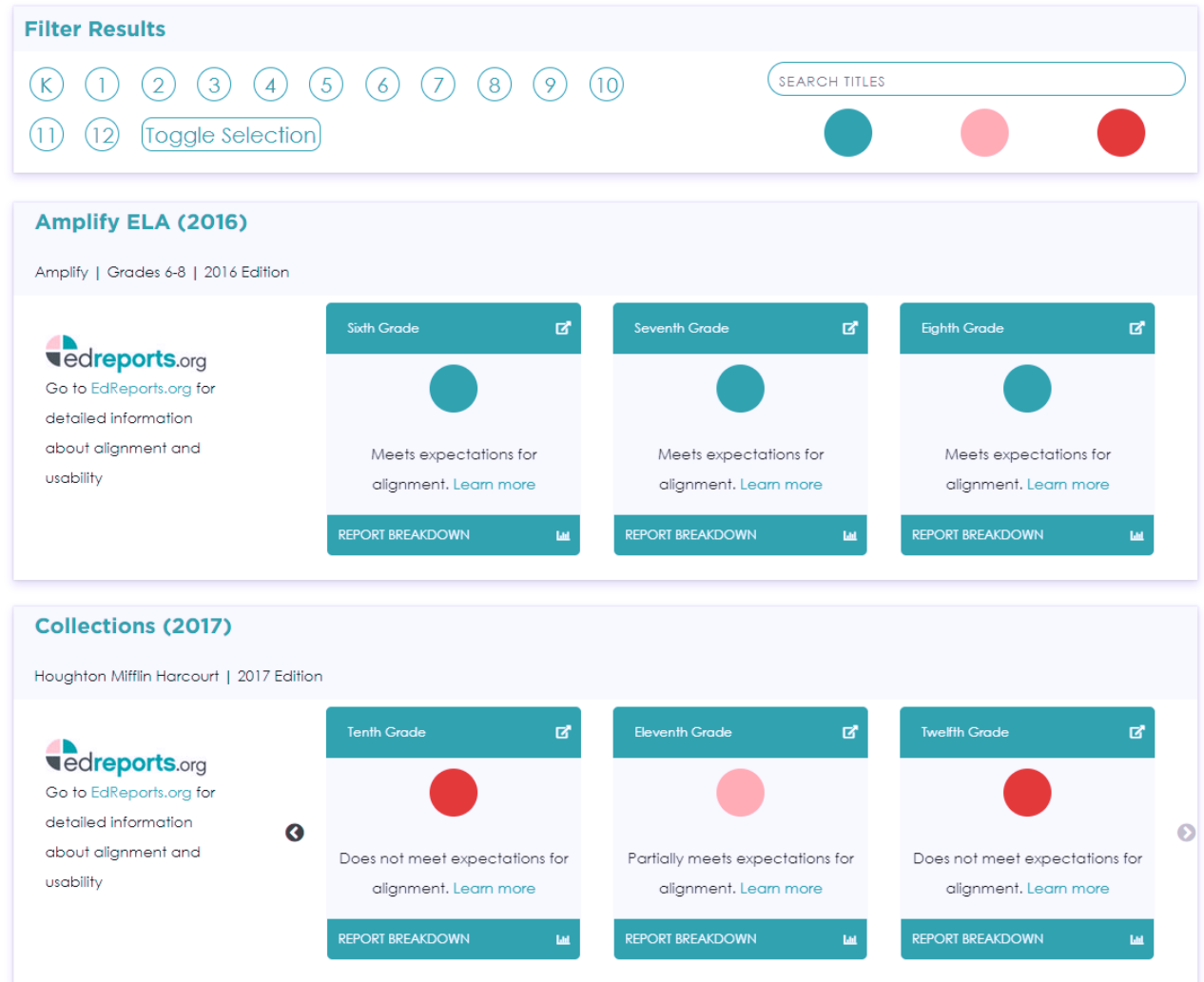
REPORT BREAKDOWN

Twelfth Grade

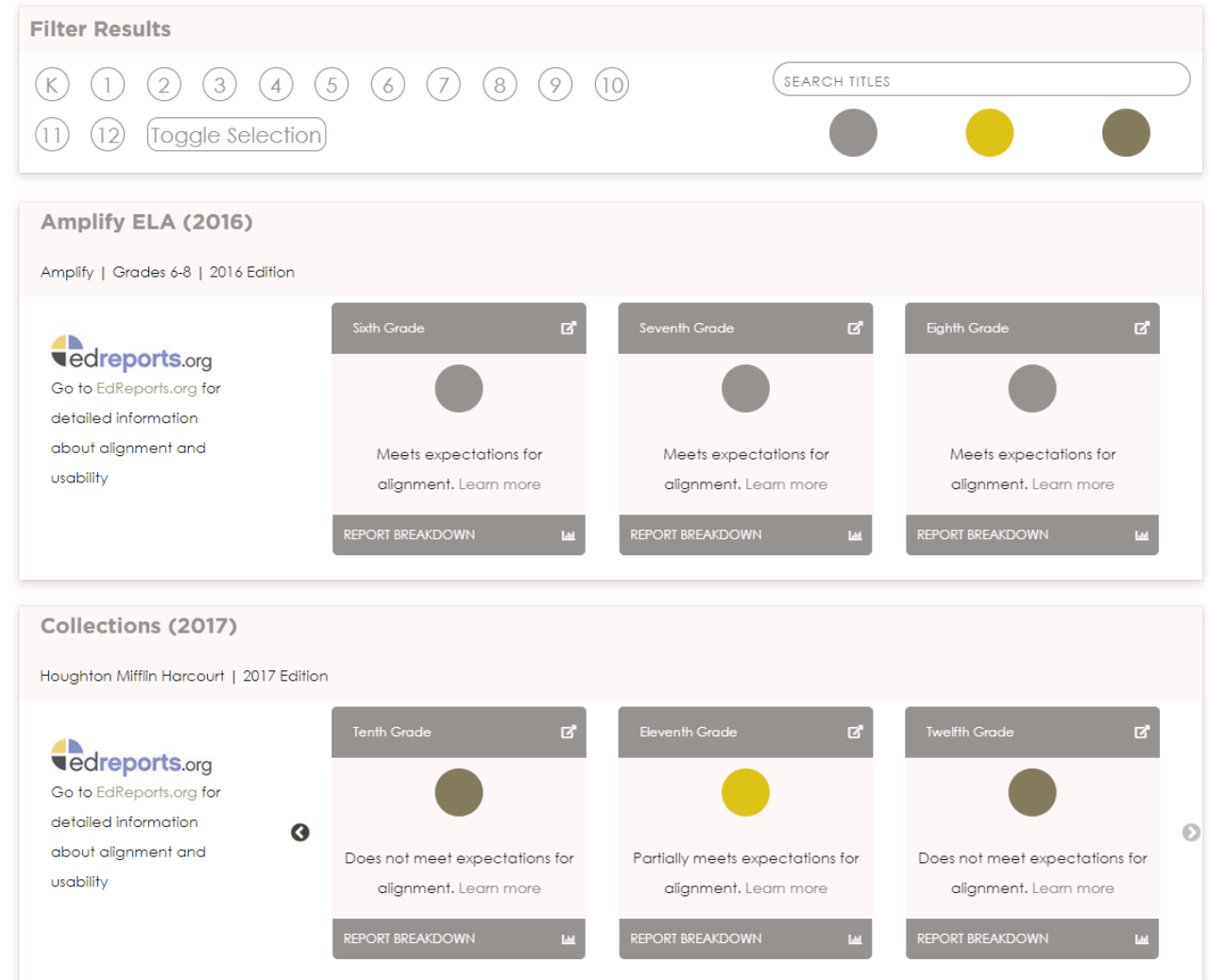
Does not meet expectations for alignment. [Learn more](#)

REPORT BREAKDOWN

- Blue-Blind/Tritanopia



- Red-Blind / Protanopia
- Very difficult to tell  
***Meets*** vs ***Does not meet***



- Visual cues added

### Filter Results

K
1
2
3
4
5
6
7
8
9
10
11
12
Toggle Selection

SEARCH TITLES

### Amplify ELA (2016)

Amplify | Grades 6-8 | 2016 Edition

Go to [EdReports.org](#) for detailed information about alignment and usability

Sixth Grade	Seventh Grade	Eighth Grade
<p>Meets expectations for alignment. <a href="#">Learn more</a></p>	<p>Meets expectations for alignment. <a href="#">Learn more</a></p>	<p>Meets expectations for alignment. <a href="#">Learn more</a></p>
REPORT BREAKDOWN	REPORT BREAKDOWN	REPORT BREAKDOWN

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Tenth Grade	Eleventh Grade	Twelfth Grade
<p>Does not meet expectations for alignment. <a href="#">Learn more</a></p>	<p>Partially meets expectations for alignment. <a href="#">Learn more</a></p>	<p>Does not meet expectations for alignment. <a href="#">Learn more</a></p>
REPORT BREAKDOWN	REPORT BREAKDOWN	REPORT BREAKDOWN

# Red-Blind / Protanopia

## REMEMBER

- Different kinds of color blindness
- Don't use COLORS as only way to convey meaning

**Filter Results**

K 1 2 3 4 5 6 7 8 9 10 11 12 Toggle Selection

SEARCH TITLES

✓ ⚠

**Amplify ELA (2016)**

Amplify | Grades 6-8 | 2016 Edition

edreports.org  
Go to EdReports.org for detailed information about alignment and usability

Sixth Grade	Seventh Grade	Eighth Grade
✓ Meets expectations for alignment. Learn more	✓ Meets expectations for alignment. Learn more	✓ Meets expectations for alignment. Learn more
REPORT BREAKDOWN	REPORT BREAKDOWN	REPORT BREAKDOWN

**Collections (2017)**

Houghton Mifflin Harcourt | 2017 Edition

edreports.org  
Go to EdReports.org for detailed information about alignment and usability

Tenth Grade	Eleventh Grade	Twelfth Grade
⬤ Does not meet expectations for alignment. Learn more	⚠ Partially meets expectations for alignment. Learn more	⬤ Does not meet expectations for alignment. Learn more
REPORT BREAKDOWN	REPORT BREAKDOWN	REPORT BREAKDOWN



# Mobility

- Use of specialized hardware
  - Head pointer, mouth stick, and other aids to help with typing;
  - On-screen keyboard with trackball, joysticks, or other pointing devices;
  - Switches operated by foot, shoulder, sip-and-puff, or other movements;
  - Voice recognition, eye tracking, and other approaches for hands-free interaction.
- Lack of motor control
  - Tremor and spasms
  - Muscular dystrophy
  - Quadriplegia

# Mobility

- Spacing
- Does someone have to be precise on their clicks/touches to activate a control?

# BAD

https://www.somesite.com

Filter by last name

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

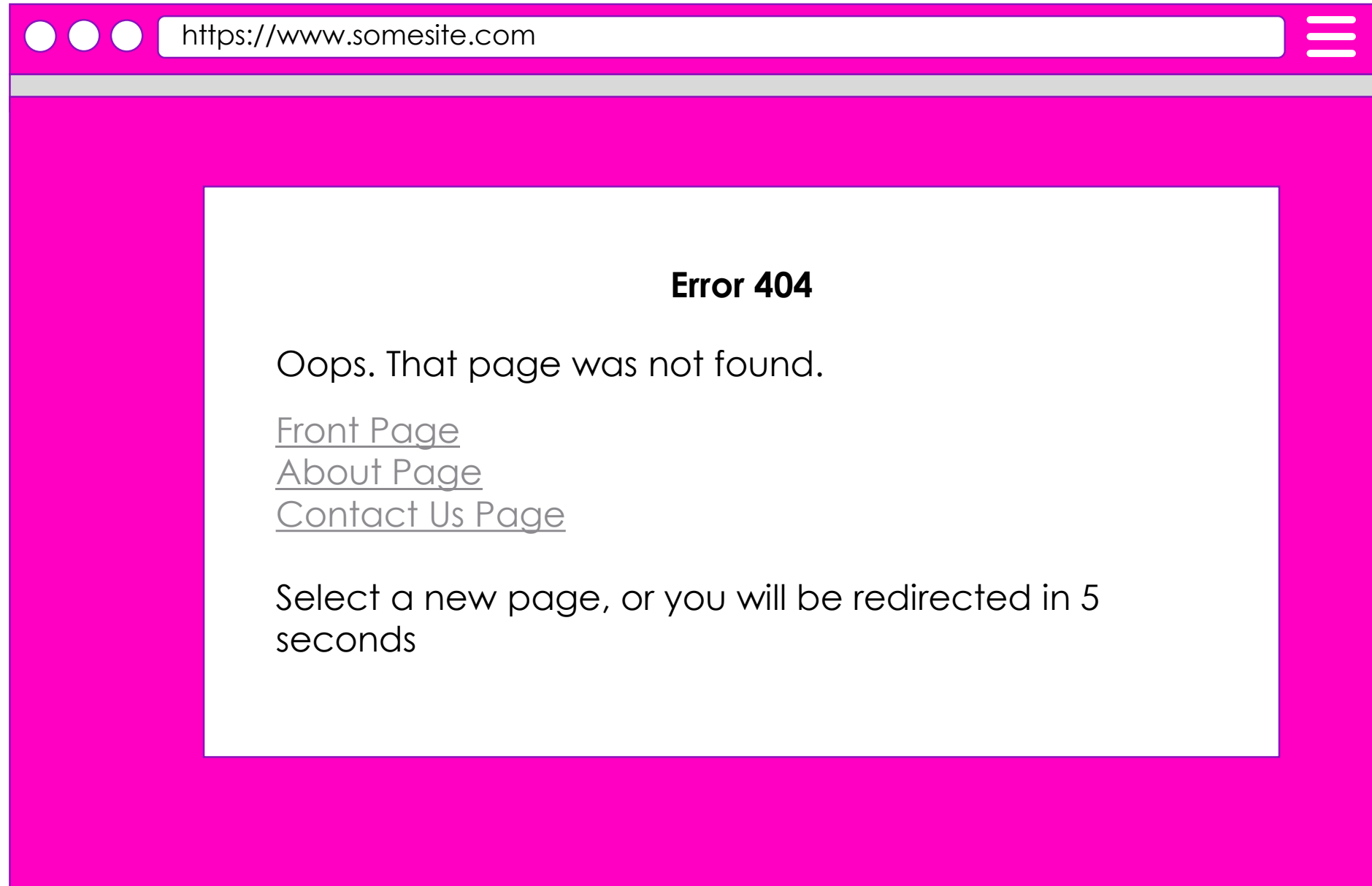
Date	Region	Rep	Item	Units	Total
1/6/2018	East	Jones	Pencil	95	189.05
1/23/2018	Central	Kivell	Binder	50	999.5
2/9/2018	Central	Jardine	Pencil	36	179.64
2/26/2018	Central	Gill	Pen	27	539.73
3/15/2018	West	Sorvino	Pencil	56	167.44
4/1/2018	East	Jones	Binder	60	299.4
4/18/2018	Central	Andrews	Pencil	75	149.25
5/5/2018	Central	Jardine	Pencil	90	449.1
5/22/2018	West	Thompson	Pencil	32	63.68
6/8/2018	East	Jones	Binder	60	539.4
6/25/2018	Central	Morgan	Pencil	90	449.1
7/12/2018	East	Howard	Binder	29	57.71
7/29/2018	East	Parent	Binder	81	1,619.19
8/15/2018	East	Jones	Pencil	35	174.65
9/1/2018	Central	Smith	Desk	2	250
9/18/2018	East	Jones	Pen Set	16	255.84
10/5/2018	Central	Morgan	Binder	28	251.72

Page 1 2 3 4 5 6

# Animations and Timing

- Do you have to click a moving target or have any sort of time-restraints for actions?

# BAD



# Hearing Impairment

- **Hard of hearing** – mild or moderate hearing impairments in one or both ears.
- **Deafness** – substantial, uncorrectable impairment of hearing in both ears.

# Hearing Impairment

- Primarily deals with ensuring audio content has captions and/or transcripts available.
- Can also refer to any audio cues from the website.

# Cognitive, learning, neurological

- Attention deficit hyperactivity disorder (ADHD)
- Autism spectrum disorder
- Intellectual disabilities
- Learning disabilities
- Perceptual disabilities
- Seizure disorders

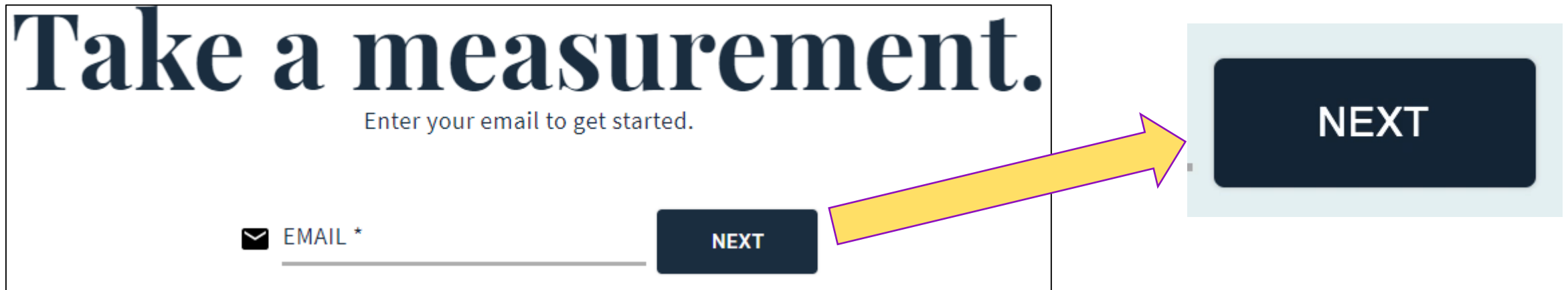


# Cognitive, learning, neurological

- Complex navigation mechanisms
- Complex sentences/content (highly subjective)
- Long passages of text without images, graphs, or other illustrations
- Moving, blinking, or flickering content, and background audio that cannot be turned off
- Page designs that cannot be adapted using web browser controls or custom style sheets

# Cognitive, learning, neurological

- Moving, blinking, or flickering content, and background audio that cannot be turned off.

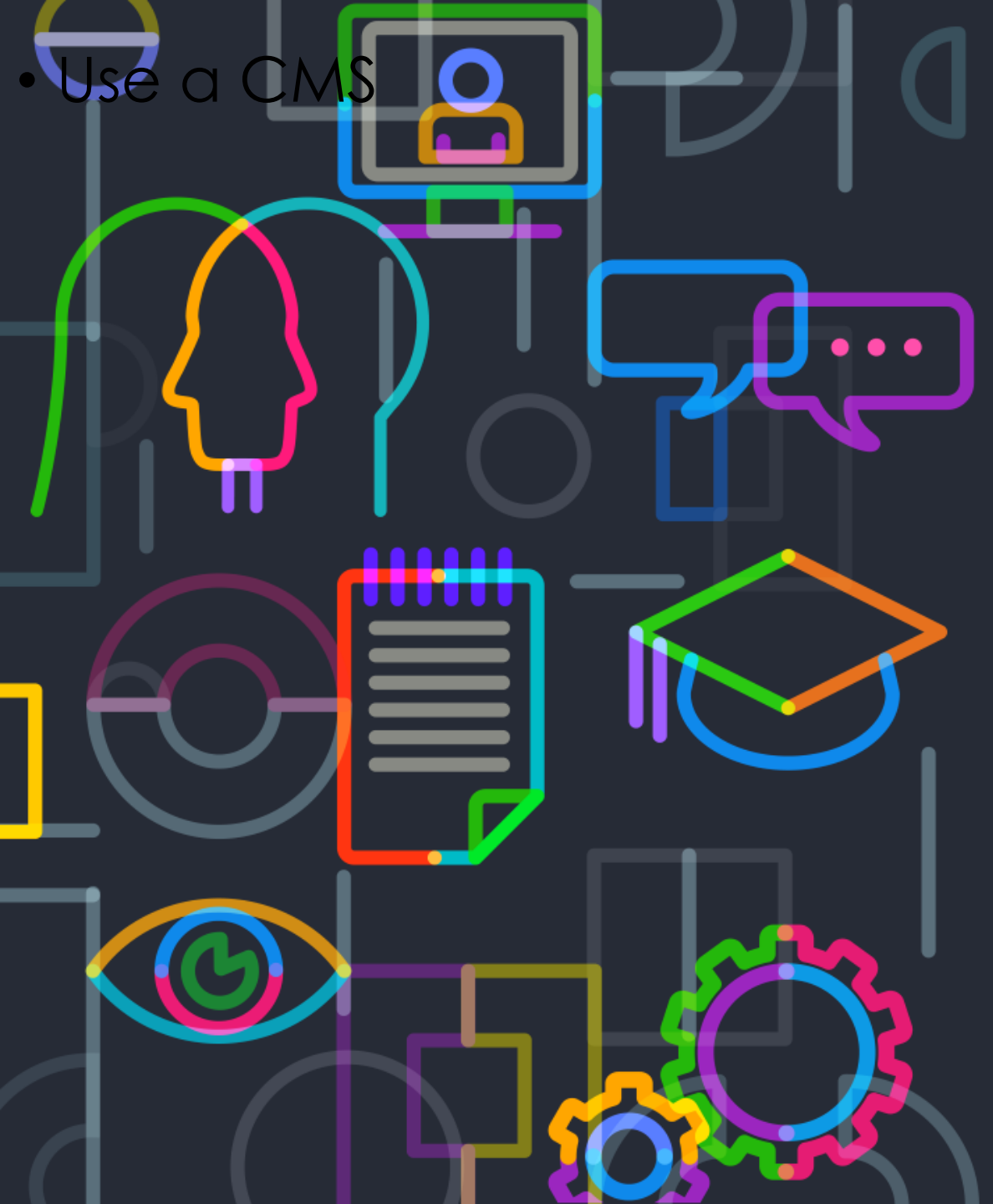


# Cognitive, learning, neurological

- It can be difficult to strike the proper balance especially when considering the spectrum of disabilities
- Many are subjective
- Contradictory
  - Font that makes it easier for one population makes it harder for another.



What to do?



- Use a CMS

- Templates

- Create an accessible template
- Deliver alternate template
- Make site-wide changes once
- Focus on content

- Publishing Workflow

- Allow review of content before release
- Check for accessibility violations

- Use automation where possible



# NDE Approach



# NDE Approach

- Wordpress
  - <https://wordpress.org/>
- Oasis Workflow
  - <https://www.oasisworkflow.com/>
- PressPermit
  - <https://publishpress.com/presspermit/>
- A lot of custom code!

# A Typical Page



Office of Early Childhood  
Home

Contact Us

Announcements & New Items

Professional Development & Training >

HSSCO: Head Start State  
Collaboration Office

Public Schools & ESUs >

Program Quality >

Families >

Resources >

Data Coalition

ECICC: Early Childhood  
Interagency Coordinating Council



## ***Our Vision: All young Nebraska children are secure, healthy, and successful.***

The Office of Early Childhood provides leadership, guidance and support to:

- develop high quality environments for young children;
- promote equitable access to inclusive programs and services for all children from birth through age eight;
- facilitate state and community partnerships that address the needs of young children and their families; and,
- provide professional development, technical assistance and resources for personnel in early childhood care and education settings.

Activities of the Office of Early Childhood include the development and implementation of policy, data collection and evaluation, leadership for systems development of early childhood initiatives, and collaboration among programs and agencies.

The Office of Early Childhood carries out the work of the Early Childhood Training Center, which disseminates an extensive print and media collection of early childhood resources, maintains a comprehensive training calendar, manages a broad array of training opportunities for early childhood personnel and families, and facilitates the state's integrated early childhood professional development system.

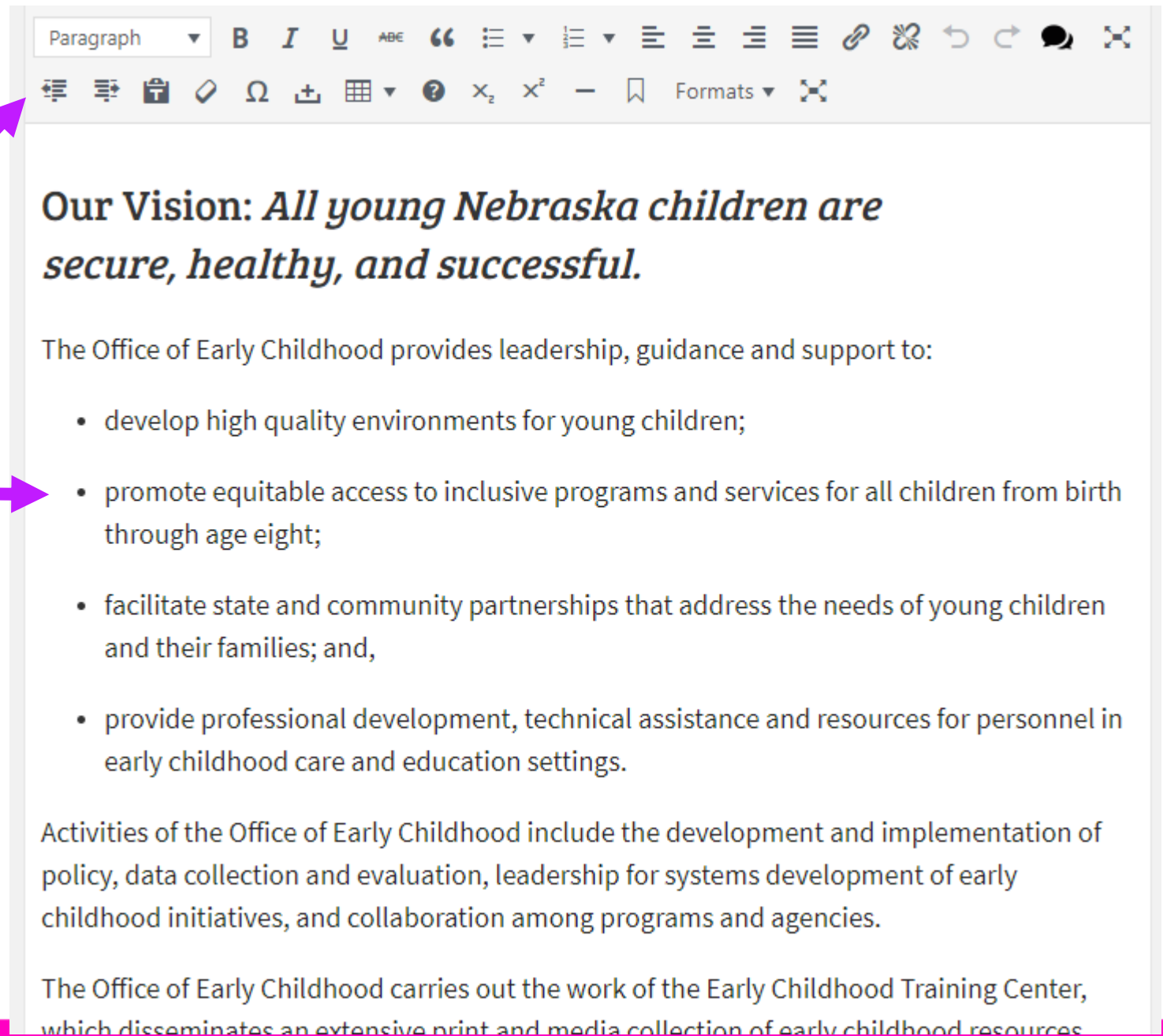
The Office of Early Childhood works jointly with the NDE Office of Special Education and the Head Start State Collaboration Office (HSSCO), and provides support for the Early Childhood Interagency Coordinating Council



# Editing

Very limited options

Only main content area

A screenshot of a web editor interface. The top toolbar contains various icons for text formatting (bold, italic, underline, strikethrough), alignment, bulleted and numbered lists, indentation, link, unlink, undo, redo, and a comment icon. Below the toolbar is a text area containing the following content:

***Our Vision: All young Nebraska children are secure, healthy, and successful.***

The Office of Early Childhood provides leadership, guidance and support to:

- develop high quality environments for young children;
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The Office of Early Childhood carries out the work of the Early Childhood Training Center, which disseminates an extensive print and media collection of early childhood resources.

Two purple arrows point from the text on the left to the editor interface. One arrow points from 'Very limited options' to the top toolbar. The other arrow points from 'Only main content area' to the main text area.

# A Typical Page



Office of Early Childhood  
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**Our Vision: *All young Nebraska children are secure, healthy, and successful.***

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# Menus

Cannot edit HTML

Limited options

Drag each item into the order you prefer. Click the arrow on the right of the item to reveal additional configuration options.

Contact UsPage ▼

Announcements & New ItemsPage ▼

Professional Development & TrainingCustom Link ▲

URL#

Navigation LabelProfessional Development & Training

Title Attribute

☒ Open link in a new tab

Item Settings (optional)Collapsible ▼

Link Relationship (XFN)

Description

The description will be displayed in the menu if the current theme supports it.

Move [Up one](#) [Down one](#) [Under Announcements & New Items](#) [To the top](#)

[Remove](#) | [Cancel](#)

Early Learning Connection sub itemPage ▼

Early Childhood Training Center sub itemPage ▼

Media Center Catalog sub itemCustom Link ▼

Nebraska Early Childhood Professional Record System (NECPRS) sub itemPage ▼

Revision of – NECPRS User Experience Study sub itemPage ▼

Education sub itemCustom Link ▼

ALL ON

ALL OFF

 HEADERS IMAGES TABLES STYLES LINKS

# Open Educational Resources



## Welcome to the Nebraska OER Toolkit

Open Educational Resources (OER) provide equal access to educational resources at no cost. This toolkit provides information and tools to help educators and education staff to understand, engage with, and sustain OER in their work and practice.

[TEACHER QUICK START GUIDE](#)

### About OER

Learn about the what, why  
and how of OER

[READ MORE](#)

### Curating

Find and evaluate OER for  
use and for sharing

[READ MORE](#)

### Creating

Create and adapt OER for the  
classroom

[READ MORE](#)

### Licensing

Understand and apply open  
licenses

[READ MORE](#)

ALL ON

ALL OFF

 HEADERS IMAGES

Has ALT

Blank ALT

NO ALT

 TABLES

Table

 STYLES

FONT|COLOR

 LINKS

Short

Here

min-height: 274px;

## &lt;h1&gt;Open Educational Resources



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[TEACHER QUICK START GUIDE](#)

## &lt;h3&gt;About OER

&lt;h5&gt;about the what, why and how of OER

text-align: center;  
[READ MORE](#)

## &lt;h3&gt;Curating

&lt;h5&gt;find and evaluate OER for use and for sharing

text-align: center;  
[READ MORE](#)

## &lt;h3&gt;Creating

&lt;h5&gt;create and adapt OER for the classroom

text-align: center;  
[READ MORE](#)


## &lt;h3&gt;Licensing


&lt;h5&gt;understand and apply open licenses

text-align: center;  
[READ MORE](#)

# WAVE Chrome Plugin

<https://www.w3.org/WAI/demos/bad/before/home.html>


 **CITYLIGHTS** *your access to the city*





QUICKMENU ----> ▾


Traffic: Construction work on Main Road

Today: Wednesday 12 June 2019, Sunny, 23°C

 HOME



 NEWS

 TICKETS



 SURVEY

## Welcome to CityLights



Citylights is the new portal for visitors and residents. Find out what's on, book tickets, and get the latest news.

**Heat wave linked to temperatures**  


After three years of effort city scientists now agree that the primary cause of the 2003 heatwave was hot air from our [MORE >>](#)


**Man Gets Nine Months in Violin Case**  


Mayor: These kinds of crimes need more creative, effective punishments. For example, we could require compulsory [MORE >>](#)

**Lack of brains hinders research**  



Brain donations: huge drop off in brain donations due to the great 'success' of 'Slow Traffic, Safe Streets' policy [MORE >>](#)

### Free Penguins



"Free penguins" slogan at zoo benefit concert causes confusion among city rockers. Adjective or verb? [Read More...](#)


### More City Parks




More parks and more green throughout the city at the price of already rare car parking spaces, how will this affect you? [Read More...](#)

### Elsewhere on the Web

Please see the following websites for important information. Citylights take no responsibility for their content. For artichoke advice, call the number below.

 [Killer bees. Click here.](#)

 [Onions. Click here.](#)

Artichoke advice telephone hotline: (1) 269 (H-O-U-E)

Copyright © 2012 W3C® (MIT, ERCIM, Keio)



# WAVE Chrome Plugin

**WAVE**  
web accessibility evaluation tool




Styles No Styles Contrast

### Summary

WAVE has detected the following:

- 38 Errors
- 24 Alerts
- 6 Features
- 13 Structural Elements
- 0 HTML5 and ARIA
- 2 Contrast Errors

### Panel Options

-  DETAILS: A listing of all the WAVE icons in your page.
-  DOCUMENTATION: Explanation of the WAVE icons and how you can make your page more accessible.
-  OUTLINE: The heading structure of the web page.

**CITYLIGHTS** *your access to the city*

alt "Red dot with a white letter 'C' that symbolizes a moon crescent as well as the sun. This logo is followed by a black banner that says 'CITYLIGHTS' which is the name of this online portal. Finally, the slogan of the portal, 'your access to the city', follows in a turquoise green handwriting style and with a slight slant across the top banner."

long alt "Red dot with a white letter 'C' that symbolizes a moon crescent as well as the sun. This logo is followed by a black banner that says 'CITYLIGHTS' which is the name of this online portal. Finally, the slogan of the portal, 'your access to the city', follows in a turquoise green handwriting style and with a slight slant across the top banner."

QUICKMENU ---->

Traffic: Construction work on Main Road Today: Wednesday 12 June 2019, Sunny, 23°C

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- Heat wave linked to temperatures
- Man Gets Nine Months in Violin Case
- Lack of brains hinders research

### Free Penguins

"Free penguins" slogan at zoo benefit concert causes confusion among city rockers. Adjective or verb?

Read More...

### More City Parks



# Services

- **Monsido**

- <https://monsido.com/>

- **Siteimprove**

- <https://siteimprove.com/en-us/>

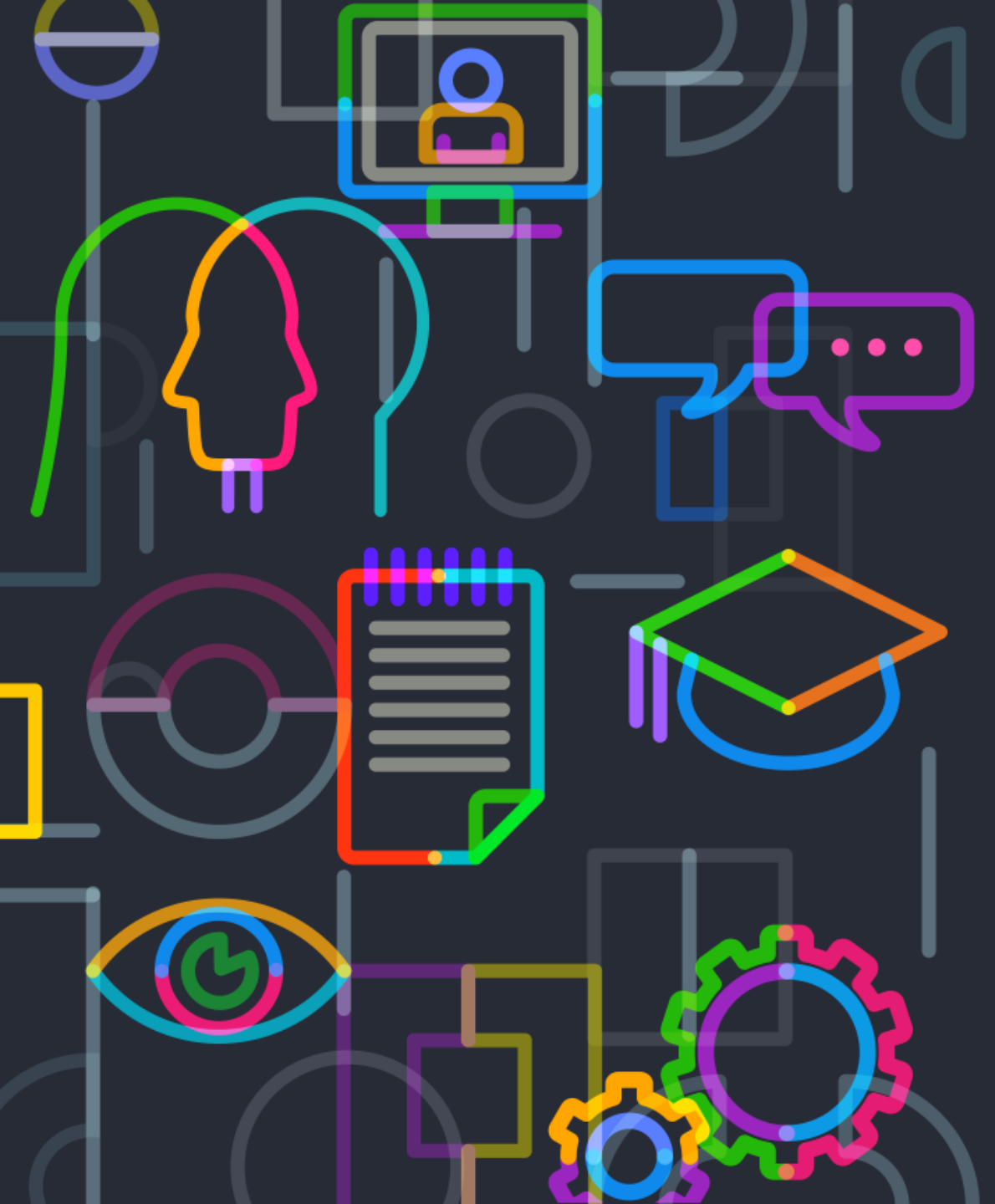


# Resources

- Web Accessibility Initiative (WAI)
  - <https://www.w3.org/WAI/>
  - <https://www.w3.org/WAI/perspective-videos/>
- WCAG Guidelines
  - <https://www.w3.org/TR/WCAG21/>
- Color Blindness Simulator
  - <https://www.color-blindness.com/coblis-color-blindness-simulator/>
- WebAIM
  - <https://webaim.org/>
  - <https://webaim.org/resources/contrastchecker/> (Contrast Check)

# Resources

- International Association of Accessibility Professionals
  - <https://www.accessibilityassociation.org/>
- A11y
  - <https://a11yproject.com/>
- Tools from W3C/WCAG
  - <https://www.w3.org/WAI/ER/tools/>



# Other digital assets to consider

- PDFs
- Notes
- Assignments

